

Application No. 09/362,631

63. The particle production apparatus of claim 20 wherein a radiation pathway intersects each of the independent reactant streams.

64. The particle production apparatus of claim 20 wherein a single radiation pathway intersects the plurality of independent reactant streams.

REMARKS

Claims 20-27 and 52-64 are pending. By this Amendment, the specification has been amended to update the reference to a copending application that has subsequently issued. Also, Applicants have amended claim 20 for clarity. Applicants do not intend to narrow claim 20 by this amendment. No new matter is introduced.

All of the pending claims stand rejected. Applicants respectfully request reconsideration of the pending rejection based on the following remarks.

Rejection For Indefiniteness

The Examiner rejected claim 20 under 35 U.S.C. § 112, second paragraph, as being indefinite. In particular, the Examiner suggested that the phrase, "receives product particles ... streams" be replaced with "is configured to receive product particle ... streams" to eliminate reference to methods of operating the device. While Applicants believe that the suggested insertions are inherent in the previous language, Applicants have added the language suggested by the Examiner. Applicants thank the Examiner for his suggestion. In view of the amendment, Applicants respectfully request withdrawal of the rejection of claim 20 under 35 U.S.C. § 112, second paragraph, as being indefinite.

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Rejections Under 35 U.S.C. § 102(b)

X | The Examiner rejected claims 20-22, 54 and 55 under 35 U.S.C. § 102(b) as being anticipated over U.S. Patent 5,498,446 to Axelbaum et al. (the Axelbaum patent). The Examiner pointed to the abstract and Figs. 1 and 3 for support of the rejection. Evidently, there is some misunderstanding since the Axelbaum patent only discloses a single reactant flow, as explained further below. Thus, the Axelbaum patent does not prima facie anticipate Applicants claimed invention directed to an apparatus with a plurality of independent reactant flows. Applicants respectfully request reconsideration of the rejection based on the following comments.

X | The Axelbaum patent discloses a concentric tube burner, as shown in Figs. 1 and 3. The sodium flow and the halide flow combine prior to reaction since the sodium flow and the halide flow include reactants that are combined for the reaction to take place. See, for example, equations 1 and 2 at column 5. In contrast, Applicants' claimed invention recites "a plurality of independent reactant streams." The Axelbaum patent does not teach a plurality of independent reactant streams. Therefore, the Axelbaum patent does not prima facie anticipate Applicants' claimed invention. Applicants respectfully request withdrawal of the rejection of claims 20-22, 54 and 55 under 35 U.S.C. § 102(b) as being anticipated over the Axelbaum patent.

Rejection Under 35 U.S.C. § 103(a) Over The Axelbaum Patent

The Examiner rejected claim 58 under 35 U.S.C. § 103(a) as being unpatentable over the Axelbaum patent. The Examiner asserted incorrectly that the difference between the disclosure of the Axelbaum patent and Applicants' claimed invention was the shape of the filter. In particular, the Axelbaum patent completely fails to disclose significant features of Applicants' claimed invention. Therefore, the Axelbaum patent does not render Applicants' invention prima facie obvious. Applicants respectfully request reconsideration of the rejection based on the following detailed analysis.

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As noted above, the Axelbaum patent completely fails to disclose a plurality of independent reactant flows. In particular, the Axelbaum patent discloses a single reactant flow associated with a tube burner. Applicants' claimed apparatus comprises a plurality of independent reactant flows. Furthermore, the Examiner's conclusory assertions regarding the obviousness of changing the size and shape of a component is taken out of context and does not properly account for the fact specific analysis required in a Graham analysis. However, issues regarding the filter are not dispositive since the Axelbaum patent clearly does not teach or suggest a plurality of independent reactant flows.

The Examiner has failed to establish prima facie obviousness of Applicants' claimed invention over the teachings of the Axelbaum patent. Applicants respectfully request withdrawal of the rejection of claim 58 under 35 U.S.C. § 103(a) as being unpatentable over the Axelbaum patent.

Rejections Of Claims 20-22, 54, 55, 63 and 64 Over JP 61-67836

The Examiner rejected claims 20-22, 54, 55, 63 and 64 under 35 U.S.C. § 103(a) as being unpatentable over published Japanese patent application JP 61-67836 (the '836 application). Again, there must be some misunderstanding since the Examiner bases the rejection on assertions that an omitted element with a corresponding omission of function is obvious or alternatively that making elements integral has been held to be obvious. As explained below, the differences between Applicants' claimed invention and the disclosure of the '836 application do not involve either omitting an element or making an element integral. Therefore, whether or not these legal assertions have any merit, the Examiner has failed to establish prima facie obviousness. Applicants respectfully request reconsideration of the rejection based on the following comments.

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X | All claim elements must be taught or suggested by the cited references. See, for example, MPEP 2143.03. As noted by the Examiner on page 4 of the October 17, 2002 Office Action, the JP '836 application fails to disclose a configuration of the particle collector to receive particles from a plurality of reactant flows. Having admitted this deficiency of the cited reference, the Examiner asserts that "omission of an element with a corresponding omission of function is within the level of ordinary skill." However, with all due respect, the case law cited by the Examiner does not support the broad assertions of the Examiner and furthermore is not relevant to the present fact situation. In particular, the JP '836 application fails to disclose an element, which is not the same at all as omitting an element. Specifically, the JP '836 application does not teach, suggest or motivate a particle collector with a flow configured to receive particles from a plurality of independent reactant flows. Since the JP '836 application fails to disclose an element of the claimed invention, the Examiner's asserted citations of law relating to omitted elements is not on point.

Furthermore, the Examiner asserted that "it has been held that 'making elements integral was held to have been obvious.'" Office Action at page 5. With all due respect, the Examiner has not indicated what elements have been made integral in Applicants' claimed invention. The formation of a particle production apparatus with a collector configured to collect particles from a plurality of reactant flows does not inherently involve making an element integral.

The JP '836 application does not teach or suggest a particle collector that is configured to collect particles from a plurality of reactant flows. Since the JP '836 application does not disclose all the elements of the claimed invention, the JP '836 application does not render Applicants' claimed invention prima facie obvious. Applicants respectfully request withdrawal of the rejection of claims 20-22, 54, 55, 63 and 64 under 35 U.S.C. § 103(a) as being unpatentable over published the JP '836 application.

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Rejection of Claims 23, 25-27, 52, 53, 58 and 59 Over the JP '836 Application

The Examiner rejected claims 23, 25-27, 52, 53, 58 and 59 under 35 U.S.C. § 103(a) as being unpatentable over the JP '836 application. In particular, the Examiner asserted that the difference between the disclosure of the JP '836 application and Applicants' claimed invention is the provision of a plurality of reaction chambers. However, Applicants maintain that the JP '836 application has significant deficiencies with respect to disclosing Applicants' claimed invention of independent claim 20. The Examiner has failed to assert prima facie obviousness of Applicants' claimed invention. Applicants respectfully request reconsideration of the rejection based on the following comments.

As noted above, the JP '836 application does not teach or suggest a particle collector configured to receive particles from a plurality of independent reactant flows. Therefore, the JP '836 patent fails to teach or suggest a feature of Applicants' claimed invention. With respect to the specific features of claims 23, 25-27, 52, 53, 58 and 59, the Examiner relies on assertions that it has been held to be obvious to make elements separable and that changes in size, degree and shape have also been found to be obvious. Applicants note that these issues are taken out of context. While Applicants do not agree with the Examiner's position with respect to the specific features of these claims, the issue is presently moot due to the clear deficiencies of the JP '836 application with respect to the claimed collector.

Since the JP '836 application does not teach or suggest a claimed feature of Applicants' invention, the JP '836 application does not render Applicants' claimed prima facie obvious. Applicants respectfully request withdrawal of the rejection of claims 23, 25-27, 52, 53, 58 and 59 under 35 U.S.C. § 103(a) as being unpatentable over the JP '836 application.

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Rejection Over The JP '836 Application and Beaty

The Examiner rejected claims 24, 56, 57 and 60-62 under 35 U.S.C. § 103(a) as being unpatentable over the JP '836 application as applied to claims 23, 25-27, 52, 53, 58 and 59, in view of U.S. Patent 5,194,128 to Beaty et al. (the Beaty patent). The Examiner further asserted that the JP '836 application teaches the production of different particle sizes and compositions. The Examiner cited the Beaty patent for disclosing the manufacture of particles from individual sources or combinations of particles prior to collection. Applicants maintain that there is no motivation to combine the invention since the JP '836 application teaches away from the combination. Thus, the Examiner has failed to assert a case of prima facie obviousness. Applicants respectfully request reconsideration of the rejection based on the following comments.

The JP '836 application teaches the placement of filters/collectors at locations facing the reactant nozzles. See the translation at page 3, under Problems to be solved by the invention. Furthermore, the injection nozzles (25₁) to (25_n) and the filters (29₁) to (25_n) are arranged in pairs. See the translation at page 4, third paragraph. Thus, the powders from different reaction flows are necessarily separately collected. Since the JP '836 application emphasizes the separate collection of the powders produced in different flow, it teaches away from the combination with the apparatus of Fig. 5 of the Beaty patent. In addition, the combination of the JP '836 application with the apparatus of Fig. 5 of the Beaty patent destroys the intended purpose of the apparatus of the JP '836 patent with respect to separate collection of particles.

The Examiner has pointed to In re Newell, 13 USPQ 2d 1248 (Fed.Cir. 1989) to suggest that a person of ordinary skill in the art would have been motivated to make the combination of Beaty and the '836 application because the motivation to make a specific structure is always related to the properties or uses that one skilled in the art would expect the

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structure to have. (Office Action, page 6). However, the Newell case involved a patent applicant that successfully argued that there was no motivation to combine the prior art to make his invention. See In re Newell, at 1250. Recognition of the relatedness of structure and function does not supply the motivation without some suggestion to perform the modification.

Indeed, the Newell court pointed out that "The critical inquiry is whether 'there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination' ". Id (emphasis in original). As discussed above, there is no suggestion in the cited prior art that suggests the desirability, and hence the obviousness of making the combination. In fact, in the present case, the Office Action has failed to establish prima facie obviousness since there is not motivation to combine the references, since the '836 application teaches away and since the combination destroys the stated function of the apparatus in the '836 application.

Another case cited by the Examiner to support the holding of a motivation to combine similarly found no motivation to combine the cited references. Fromson v. Advanced Offset Plate, Inc., 225 USPQ 26, 31, 32 (Fed. Cir. 1985). The Fromson case cites the identical language of the Newell court with respect to the inquiry regarding the desirability of making the combination. Similarly, the final case cited by the Examiner also determined that the claims were unobvious over the cited art. In re Gyurik 201 USPQ 552, 558 (CCPA 1979). Furthermore, the Gyurik case did not even involve a combination of references. Thus, none of the cases cited by the Examiner support his legal position regarding the combination of references. In addition, the Examiner cited some case law relating to chemical structures for issues relating to mechanical structures, which do not at all relate to issues surrounding chemical structures.

The Examiner has failed to state a legally supported or supportable position to establish prima facie obviousness. There is no motivation to combine the teachings of the JP

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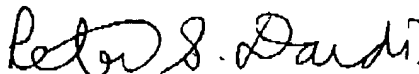
'836 application with Fig. 5 of the Beaty patent since the JP '836 application teaches away from the combination and since the combination destroys the intended purpose of the structure in the JP '836 application. Since prima facie obviousness has not been established, Applicants respectfully request withdrawal of the rejection of claims 24, 56, 57 and 60-62 under 35 U.S.C. § 103(a) as being unpatentable over the JP '836 application as applied to claims 23, 25-27, 52, 53, 58 and 59, in view of the Beaty patent.

CONCLUSIONS

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,



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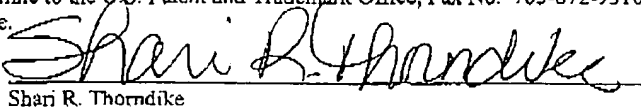
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January 17, 2003
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Shari R. Thorndike

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ATTACHMENT
MARKED-UP AMENDMENTSpecification As Amended

At page 47, lines 16-28, the paragraph has been amended as follows:

In the embodiment shown in Figs. 31 and 32, a cylindrical filter 506 is located in the flow path between reaction chamber 500 and exhaust 504. Cylindrical filter 506 is mounted at seal 508. Cap 510 is located at the end of cylindrical filter 506. Exhaust 504 generally is connected to a pump or the like to maintain the pressure within reaction chamber 500 at a desired pressure. The collection of manganese oxide nanoparticles using a reaction chamber and collection system essentially as depicted in Figs. 31 and 32 is described in copending and commonly assigned U.S. Patent Application 09/188,770, now U.S. Patent 6,506,493 to Kumar et al., entitled "Metal Oxide Particles, incorporated herein by reference.

IN THE CLAIMS

Claim 20 has been amended as follows:

20. (Three Times Amended) A particle production system comprising:
- a plurality of reactant inlets configured to direct a plurality of independent reactant streams toward one or more product outlets; and
 - a particle collection apparatus connected to the one or more product outlets to collect the product particles generated by the reactants from the plurality of reactant inlets, wherein the particle collection apparatus is configured to receive[s] product particles generated from the plurality of reactant streams.